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10/524,803	02/16/2005	Takaaki Kishigami	MAT-8669US	1028

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EXAMINER	
TRAN, THINH D	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/524,803	Applicant(s) KISHIGAMI ET AL.
	Examiner THINH D. TRAN	Art Unit 2466

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 May 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29,30,33,34 and 42-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29,30,33,34 and 42-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Status of the claim:

Claims 29, 30, 33, 34 are amended.

Claims 1-28, 31, 32, 35-41 are cancelled.

Claims 44, 45 are added.

Response to Arguments

1. Applicant's arguments filed 05/21/2010 have been fully considered but they are not persuasive.

In response to applicant argument in pages 5-7, the applicant asserts that "Neither Onggosanusi, Wallace, Alastala, Heath, Walton nor their combination suggests transmitting a plurality of beams to a plurality of mobile stations at the same time in the same frequency band which reduces interferences." However the examiner respectively disagrees since as indicated in the rejection and the WALTON, which indicated transmit antennas are assigned to a particular frequency subchannel group using the max-max and transmitting channel assigns to terminal for transmit antenna/terminal pairing, which the best SNR is achieved, this would indicate the transmission using multiple channels at the same time in they same frequency band which reduce interferences. As indicated by par. 45 and par. 46 of WALTON that the frequency subchannel group is one frequency subchannel and the number of simultaneous transmission is the number of spatial channels and in par. 65, par. 66, and equation 2, wherein multiple channels

using single frequency subchannel group, which is one frequency subchannel to determining the hypothesis matrix and as indicated in par. 100-104, the max-max criterion is used to determine the best SNR of the hypothesis matrix, which is a function of a single frequency channel of multiple spatial channels, and the SNR as indicated by par. 55 of WALTON is to signal to noise or interference ratio, by determining the best SNR, the interferences between the channels is reduce, therefore WALTON does teach a plurality of beams to a plurality of mobile stations at the same time in the same frequency band which reduces interferences.

Therefore the rejection is maintained.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. Claims 29, 30, 33, 34, 42, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over ONGGOSANUSI et al. (US 7,110,378) in view of WALLACE et al. (US 20020193146), ALASTALO et al. (US 20010047424), HEATH, Jr. et al. (US 6,937,592), and WALTON et al. (US 20030128658).

Regarding claim 29, ONGGOSANUSI teaches a base station apparatus comprising: a partial-space orthogonalizing section for performinq a weighting process **(see col. 5 lines 24-30, wherein the beamformer weight (see fig. 1 block 30) determiner a set of beamformer weight then pass to transmitter module, wherein the transmitter module would comprise "partial-space orthogonalizing", (fig. 2 block 38, block))**, for enhancing orthogonality over a propagation path for the SDM transmission **(see col. 5 lines 40-44, wherein the weight is applied to a unique sub-channel, which would read in the claim as "a propagation path," col. 10 line 4-7, wherein the weights are deprive from an orthogonal eigenvenvector and applied to the signal to transmit or receive signal via the orthogonal sub channel, which would read in the claim as enhancing orthorgonality, wherein with beamforming technology, it enables to reuse frequency and time slot for transmission)**, on a first transmission data sequence to be sent by the SDM transmission to the SDM compatible mobile station **(see col. 6 lines 15-29, wherein a stream of data is transmitted to a receiver, the transmitter module would consider as the "space division multiplex", while the receiver would read in the claim as the "compatible mobile station")**; a beam forming section for forming a plurality of transmission beams **(see col. 5 lines 24-30, wherein the beamformer weight (see fig. 1 block 30)**

determiner a set of beamformer weight then pass to transmitter module, see col.6 lines 2-8, wherein the signal is being weighted by the beamformer weight vectors, to form a directional transmission, which the signal stream is then coupled to each of the transmit antennas) for an output of the partial-space orthogonizing section **(see col. 5 lines 65-67 and col. 6 lines 1-5, wherein in response to the signal modulator 18 and connected to the weight coupling, which would consider as the "partial-space orthogonizing")** in order to send the first transmission data sequence by the SDM transmission to the SDM compatible mobile station **(see col. 6 lines 15-29)** and a wherein it shows the N-user access without multi-access interference **(see col. 21 lines 16-20, col. 21 lines 32-43)**; and a plurality of antennas for transmitting the first transmission data sequence using the plurality of transmission beams **(see col. 4 lines 61-63, fig. 1 block 14)**; wherein the system identified available sub-channels through the computation of the singular value decomposition of the channel estimator for the overall space-time channel **(see col. 8 lines 1-19)**; the number of non-interference sub-channels is determined based on the analysis of the channel **(see col. 9 lines 20-27)**;

However, ONGGOSANUSI fails to teach a deciding section for deciding an allocation for a plurality of mobile stations within a communication area, by judging: 1) whether one of the plurality of mobile stations is a space-division-multiplex (SDM) compatible mobile station by use of a predetermined SDM evaluation criterion; and 2) whether another of the plurality of mobile stations is a space-division- multiple-access (SDMA) compatible mobile station to which a SDMA transmission can be applied along

with the SDM compatible mobile station by use of a predetermined SDMA evaluation criterion; wherein the SDM transmission evaluation criterion and the SDMA evaluation criterion are to be calculated depending upon a channel estimation value and received quality received from the SDM compatible mobile station and the SDMA mobile station within the communication area; a single transmission beam for a second transmission data sequence to be sent by the SDMA transmission to the SDMA compatible mobile station; and a plurality of antennas for transmitting the first transmission data sequence using the plurality of transmission beams and the second transmission data sequence using the single transmission beam.

But, WALLACE in the same field of endeavor teaches the base station determines whether the mobile station support the diversity by query the mobile station and using the information from the mobile station to determine if the mobile station has one antenna or multiple antennas **(see par. 104-106)**; the base station can communicated in mixed mode system, which the base station can communicated with SISO and MIMO stations **(see par. 129)**; wherein, in a case that the SDM compatible mobile station and a SDM incompatible mobile station are allocated for the communication at a same time **(see par. 68, par. 129, mixed mode in multiple access)**, the beam forming section makes, for the SDM incompatible mobile station, a maximum ratio synthetic beam as a transmission beam to the SDM incompatible mobile station **(see par. 67, par. 75 and par. 110);**

Thus, it would have been obvious to the person ordinary skill in the art at the time of the invention to implement the determination the number of antenna the mobile

station has to determine whether the mobile station support spatial diversity and creates the transmission beam as taught by WALLACE for the system of ONGGOSANUSI to provide a deciding section for judging whether the mobile station is SDM compatible or incompatible by using a criterion and creating a maximum ratio synthetic beam as a transmission beam to the SDM incompatible mobile station.

The motivation would have been to provide high-quality, efficient communication in mixed mode system (see WALLACE par. 6);

However, ONGGOSANUSI and WALLACE do not explicitly teach 2) whether another of the plurality of mobile stations is a space-division- multiple-access (SDMA) compatible mobile station to which a SDMA transmission can be applied along with the SDM compatible mobile station by use of a predetermined SDMA evaluation criterion; a single transmission beam for a second transmission data sequence to be sent by the SDMA transmission to the SDMA compatible mobile station; and a plurality of antennas for transmitting the first transmission data sequence using the plurality of transmission beams and the second transmission data sequence using the single transmission beam; wherein, in a case that the SDM compatible mobile station and a SDM incompatible mobile station are allocated for the SDMA communication at a same time.

But, ALASTALO in same field of endeavor teaches the access point determine whether space division multiple access technology can be applied for each terminal, whether the terminal can be served simultaneously with one or more other terminals **(see par. 57 and par. 58)**;

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the determination whether the terminal can support SDMA base on packet length or spatial signature as taught by ALASTALO in the system of WALLACE and ONGGOSANUS to determine whether the mobile station is SDMA compatible by using a criterion and to provide that a single transmission beam for the SDMA, which as indicated by ONGGOSANUS that there are plurality of antennas using to transmit plurality of transmission beams and that the terminals can not be served simultaneously if the spatial signatures are similar as taught by ALASTALO, then it is obvious to use one of the plurality of transmission as taught by ONGGOSANUS for a transmission stream for SDMA and using the other transmission stream for SDM, wherein, in a case that the SDM compatible mobile station and a SDM incompatible mobile station are allocated for the SDMA communication at a same time.

The motivation would have been to prevent reduce interference and provide more efficient communication resource (see ALASTALO par. 9).

However, ONGGOSANUS, WALLACE, and ALASTALO do not explicitly teach wherein the SDM transmission evaluation criterion and the SDMA evaluation criterion are to be calculated depending upon a channel estimation value and received quality received from the SDM compatible mobile station and the SDMA mobile station within the communication area;

But, HEATH in a similar or same field of endeavor teaches measuring the transmission characteristics and calculating based on the transmission characteristic to

determine the operation mode of either spatial multiplexing or non-spatial multiplexing **(see col. 12 lines 16-35, col. 17 claim 11)**;

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the measuring the transmission link and determine operation mode bases on the calculation on the measuring as taught by HEATH for the system of ONGGOSANUS that determine the number of available sub-channel through the computation of the singular value decomposition of the channel estimator to calculate the SDM transmission evaluation criterion (as in WALLACE) and the SDMA evaluation criterion (as in ALASTOLO) depending upon a channel estimation value and received quality received from the SDM compatible mobile station and the SDMA mobile station within the communication area;

The motivation would have been to provide method for adapts mode of operation in response to various transmission-specific variables.

However, ONGGOSANUSI, WALLACE, ALASTALO, and HEATH do not explicitly teach for the SDM compatible mobile station, another transmission beam as a beam for reducing an interference with another of the SDM incompatible mobile station and the SDM compatible mobile station to access simultaneously.

But, WALTON in a similar or same field of endeavor teaches wherein transmit antennas are assigned to a particular frequency subchannel group using the max-max and transmitting channel assigns to terminal for transmit antenna/terminal pairing, which the best SNR is achieved **(see WALTON par. 100-104);**

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the using of max-max for the transmit antennas to assigned a particular frequency subchannel group to provide the best SNR as taught by the WALTON in the system of ONGGOSANUSI, WALLACE, ALASTALO, and HEATH to provide for the SDM compatible mobile station, another transmission beam as a beam for reducing an interference with another of the SDM incompatible mobile station and the SDM compatible mobile station to access simultaneously.

The motivation would have been to achieve best SNR therefore reducing interference.

Regarding claim 30, ONGGOSANUSI teaches the base station apparatus according to claim 29, wherein forming the transmission beam for reducing the interference by the beam forming section is to form the transmission beam from the transmission data sequence to the allocated SDMA compatible mobile station **(see col. 9 lines 16-19, wherein the matrix H is represented as the overall channel characteristic for the available signal paths of the transmitted signal, in col. 21 lines 59-60 shows that the beamformer optimize the k-th user BER, wherein the BER depend on the interference, which the lower error rate the lower the interference)** and an output of the partial-space orthogonalizing section, in a manner being orthogonal to a channel estimation matrix on another mobile station to access simultaneously **(see col. 9 lines 16-19, wherein the matrix H is represented as the overall channel characteristic for the available signal paths. see col. 10 lines 1-7,**

wherein the output after beamformer vector derives from the eigenvectors would be orthogonal to the matrix H).

Regarding claim 33, ONGGOSANUSI teaches the base station apparatus according to claim 29, wherein, forming the transmission beam for reducing the interference by the beam forming section is to form the transmission beam orthogonal to a channel estimation matrix on another of a SDM incompatible mobile station and the SDM compatible mobile station to access simultaneously **(see col. 9 lines 16-19, wherein the matrix H is represented as the overall channel characteristic for the available signal paths of the transmitted signal, in col. 21 lines 59-60 shows that the beamformer optimize the k-th user BER, wherein the BER depend on the interference, which the lower error rate the lower the interference)**.

Regarding claim 34, ONGGOSANUSI teaches the base station apparatus according to claim 29, further comprising space-time coding means for making a space-time coding process on the transmission data sequence to the SDM compatible mobile station **(see col. 6 lines 1-8, wherein the modulated signal stream are transmitted over multiple antennas (space time coded) and weighted with corresponding value (partial-space orthogonizing))**, the transmission data sequence space-time-coded being outputted to the partial-space orthogonalizing section **(see col. 5 lines 30-35, wherein the stream of data transmits to the single stream transmitter module 18, wherein the transmitter module would comprise partial-space orthogonizing)**.

Regarding claim 42, ONGGOSANUSI teaches a base station apparatus according to claim 29, the transmission beam to the SDM compatible mobile station is

formed in a manner being orthogonal to a channel estimation matrix on another space division multiple access SDMA mobile stations to access simultaneously **(see col. 9 lines 16-19, wherein the matrix H is represented as the overall channel characteristic for the available signal paths of the transmitted signal, in col. 21 lines 59-60 shows that the beamformer optimize the k-th user BER, wherein the BER depend on the interference, which the lower error rate the lower the interference)**.

However, ONGGOSANUSI, ALASTO, HEATH, and WALTON do not explicitly teach wherein, in a case that the SDMA mobile stations include a SDM compatible mobile station and a SDM incompatible mobile station, another transmission beam to the SDM incompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the SDM incompatible mobile station;

But, WALLACE teaches a base station apparatus according to claim 29, wherein, in a case that the SDMA mobile stations include a SDM compatible mobile station and a SDM incompatible mobile station **(see par. 104, par. 129)**, another transmission beam to the SDM incompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the SDM incompatible mobile station **(see par. 112, par. 113)**, and

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the method as taught by WALLACE in the system of ONGGOSANUSI, ALASTOLO, HEATH, WALTON for in a case that the SDMA mobile stations include a SDM compatible mobile station and a SDM incompatible mobile

station, another transmission beam to the SDM incompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the SDM incompatible mobile station, and the transmission beam to the SDM compatible mobile station is formed in a manner being orthogonal to a channel estimation matrix on another SDMA mobile stations to access simultaneously.

The motivation would have been to provide high-quality, efficient communication in mixed mode system (see WALLACE par. 6);

Regarding claim 43, ONGGOSANUSI teaches a base station apparatus according to claim 30, the transmission beam to the SDM compatible mobile station is formed in a manner being orthogonal to a channel estimation matrix on another space division multiple access SDMA mobile stations to access simultaneously **(see col. 9 lines 16-19, wherein the matrix H is represented as the overall channel characteristic for the available signal paths of the transmitted signal, in col. 21 lines 59-60 shows that the beamformer optimize the k-th user BER, wherein the BER depend on the interference, which the lower error rate the lower the interference)**.

However, ONGGOSANUSI, ALASTO, HEATH, and WALTON do not explicitly teach wherein, in a case that the SDMA mobile stations include a SDM compatible mobile station and a SDM incompatible mobile station, another transmission beam to the SDM incompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the SDM incompatible mobile station;

But, WALLACE teaches a base station apparatus according to claim 29, wherein, in a case that the SDMA mobile stations include a SDM compatible mobile station and a SDM incompatible mobile station **(see par. 104, par. 129)**, another transmission beam to the SDM incompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the SDM incompatible mobile station **(see par. 112, par. 113)**, and

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the method as taught by WALLACE in the system of ONGGOSANUSI, ALASTOLO, HEATH, and WALTON for in a case that the SDMA mobile stations include a SDM compatible mobile station and a SDM incompatible mobile station, another transmission beam to the SDM incompatible mobile station is formed by use of a complex-conjugate-transposition of a channel estimation matrix on the SDM incompatible mobile station, and the transmission beam to the SDM compatible mobile station is formed in a manner being orthogonal to a channel estimation matrix on another SDMA mobile stations to access simultaneously.

The motivation would have been to provide high-quality, efficient communication in mixed mode system (see WALLACE par. 6);

4. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over WALLACE et al. (US 20020193146) in view of ALASTALO et al. (US 20010047424) and WALTON et al. (US 20030128658).

Regarding claim 44, WALLACE teaches a base station apparatus comprising: a beam forming section for forming a first transmission beam by use of a maximum ratio synthetic beam in order to send a first transmission data sequence for a SDM uncompatible mobile station **(see par. 67, par. 75 and par. 110)**, the SDM uncompatible mobile station being a terminal allocated for communication with a SDM compatible mobile station at the same time **(see par. 68, par. 129, mixed mode in multiple access)**, the beam forming section for forming a second transmission beam in order to send a second transmission data sequence to the SDM compatible mobile station in a manner being orthogonal to the first transmission beam **(see par. 116)**, the SDM compatible mobile station being a terminal allocated for SDM communication in a communication area of the base station **(see par. 129)**.

However, WALLACE does not explicitly teach the SDM uncompatible mobile station being a terminal allocated for SDMA communication with a SDM compatible mobile station at the same time.

But, ALASTALO in same field of endeavor teaches the access point determine whether space division multiple access technology can be applied for each terminal, whether the terminal can be served simultaneously with one or more other terminals **(see par. 57 and par. 58)**;

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the multiple access using SDMA as taught by ALASTOLO in the system of WALLACE.

The motivation would have been to prevent reduce interference and provide more efficient communication resource (see ALASTALO par. 9).

However, ONGGOSANUSI and ALASTALO do not explicitly teach an antenna for transmitting the first transmission beam and the second transmission beam by use of a same frequency band at the same time.

But, WALTON in a similar or same field of endeavor teaches wherein transmit antennas are assigned to a particular frequency subchannel group using the max-max and transmitting channel assigns to terminal for transmit antenna/terminal pairing, which the best SNR is achieved **(see WALTON par. 100-104);**

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the using of max-max for the transmit antennas to assigned a particular frequency subchannel group to provide the best SNR as taught by the WALTON in the system of WALLACE and ALASTALO, to provide an antenna for transmitting the first transmission beam and the second transmission beam by use of a same frequency band at the same time.

The motivation would have been to achieve best SNR therefore reducing interference.

5. Claim 45 is rejected under 35 U.S.C. 103(a) as being unpatentable over WALLACE et al. (US 20020193146), ALASTALO et al. (US 20010047424), and WALTON et al. (US 20030128658) as applied to claim 44 above, and further in view of ONGGOSANUSI et al. (US 7,110,378).

Regarding claim 45, WALLACE, ALASTALO, and WALTO do not explicitly teach the base station according to claim 44, wherein the second transmission data sequence includes a plurality of third transmission data sequence by performing a weighting process and the plurality of third transmission data sequence have orthogonality.

But, ONGGOSANUSI in a similar or same field of endeavor teaches wherein the second transmission data sequence includes a plurality of third transmission data sequence by performing a weighting process and the plurality of third transmission data sequence have orthogonality **(see col. 5 lines 40-44, col. 10 line 4-7)**.

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to implement the weighting process to provide orthogonality in transmission as taught by ONGGOSANUSI in the system of WALLACE, ALASTALO, and WALTO.

The motivation would have been to enhance orthorgonality to reduce interference.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THINH D. TRAN whose telephone number is (571)270-3934. The examiner can normally be reached on Monday to Friday from 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel J. Ryman can be reached on (571)272-3152. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/T. D. T./
Examiner, Art Unit 2466
08/05/2010

/Daniel J. Ryman/
Supervisory Patent Examiner, Art Unit 2466